

# Excelsior Mining Announces Updated Technical Report for Gunnison Copper Project and Johnson Camp Mine

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PHOENIX, March 30, 2022 - [Excelsior Mining Corp.](#) (TSX: MIN) (PFSE: 3XS) (OTCQX: EXMGF) ("Excelsior" or the "Company") is pleased to announce the results of its Prefeasibility Study Update ("PFS" or "Report") on the North Star Deposit of the Gunnison Copper Project and Preliminary Economic Assessment ("PEA") on the Johnson Camp Mine Heap Leach, both located in Cochise County, southeastern Arizona. The Gunnison Project is designed as a copper in-situ recovery ("ISR") mine using solvent extraction-electrowinning ("SX-EW") to produce copper cathode and the Johnson Camp mine is a heap leach operation. Results of the PFS and PEA disclosed in this press release are in United States dollars.

## GUNNISON PROJECT PREFEASIBILITY STUDY

### Highlights of the PFS (United States dollars)

- Net Present Value ("NPV") of \$1,348.5 million after-tax
  - at 7.5% discount rate using a life of mine ("LOM") average copper price of \$3.93/lb;
- Internal Rate of Return ("IRR") of 44.9% after-tax;
- Pre-production capital costs of \$45.1 million
  - includes 15% contingency, EPCM, freight, mobile equipment, owner's costs and capital spares;
- Payback period for pre-production capital of 4.8 years after-tax;
- Average life of mine operating costs of \$0.91/lb;
- Total Operating Cash Cost (including royalties, non-income taxes, salvage, reclamation and closure) of \$1.21/lb
- All-In Cost (LOM capital costs plus operating costs) of \$1.70/lb;
- Life of Mine: 2,153 million pounds of commercial production over 24 years;
- Staged production profile: initial production rate of 25 million pounds of copper cathode per annum, followed by an intermediate expansion stage to 75 million pounds per annum and final expansion stage to full production of 125 million pounds per annum (includes the construction of an acid plant at full production). The staged production profile makes possible the funding of future expansions out of cash flow;
- Approximately 15 months of wellfield pre-conditioning (additional operations) to dissolve and remove calcite, along with the addition of a raffinate neutralization plant to assist with the flushing and removal of accumulated CO<sub>2</sub> gas;
- Requirement for some additional work to reduce risk and optimize process and production.

A detailed sensitivity analysis to copper price, including a comparison to the results of the 2016 Feasibility Study, is set out below under the heading "Financial Analysis". In addition, the risks and opportunities associated with the Gunnison Project are discussed below.

Commenting on this Report, President & CEO, Dr. Stephen Twyerould said, "Excelsior is committed to innovative and environmentally sustainable copper production through our flagship asset, the Gunnison Copper Project. Production challenges have highlighted the need to re-engineer wellfield ramp-up, including the introduction of a long period of pre-production CO<sub>2</sub> flushing and calcite removal. Capital costs, operating costs and the production schedule have been re-estimated to account for wellfield pre-conditioning and flushing using neutralized raffinate. These changes have been incorporated in the new PFS, which highlights the value of our Gunnison Project along with the need for additional time and work before commercial production is achieved. The Company looks forward to undertaking the recommendations of the PFS and getting back-on-track."

The PFS was completed by M3 Engineering & Technology Corporation ("M3") of Tucson, AZ and is effective as of March 11, 2022. The Technical Report (the "Report") summarizing the results of the PFS, and prepared in accordance with National Instrument ("NI") 43-101, will be filed on SEDAR today.

## Financial Analysis

The PFS base case generates an after-tax NPV of approximately \$1,348.5 million (at a cash flow discount of 7.5%) and an IRR of 44.9%. This financial analysis is based on a number of assumptions which will be fully set out in the Report.

The base case uses the following parameters over the 24-years of production:

- Copper selling price of:
  - Years 1 thru 5: \$4.25/lb
  - Years 6 thru 15: \$4.00/lb
  - Years 16 and beyond: \$3.75/lb
- Total copper recovery of approximately 48% (based on a combination of metallurgical recovery and estimated sweep efficiency);
- Average of approximately 9.5 pounds of acid consumed for every pound of copper produced;
- Acid plant construction in year 7 with the price of sulfuric acid prior to that of approximately \$120/ton and the price of sulfur of \$120 per ton delivered after that;
- Combined state and federal tax rate of 32.9%;
- Staged production commencing at 25 million pounds per annum, ramping up to 75 million pounds in year 4, and then to 125 million pounds per annum in Year 7.
- The introduction of an additional year of pre-production calcite removal and neutralized raffinate flushing for every well to address CO<sub>2</sub> flow restrictions.

FINANCIAL ANALYSIS SUMMARY		
	Pre-Tax	Post-Tax
IRR	50.3%	44.9%
Pre-Production Capital Payback (years)	4.4	4.8
NPV (million \$) @7.5%	1,777.5	1,348.5
Ratio of New Capital of NPV <sub>7.5</sub>	0.025	0.033
COST METRICS		
		Cost/lb Copper
Direct Operating Costs		0.91
Royalties, Taxes, Recl. & Salvage		0.30
Total Cash Cost		1.21

Total initial (pre-breakthrough) capital expenditures (including 15% contingency, EPCM, capital spares, owner's costs, mobile equipment and freight) are estimated at \$45.1 million. The production wellfield is estimated at \$6.1 million for drilling and wellfield infrastructure and \$29.7 million is estimated for the water treatment plant. Capitalized pre-production costs for the wellfield and water treatment plant total \$9.3 million. Initial production of copper cathode is estimated to be 25 million pounds per annum. Total sustaining capital costs over the life of the mine are \$1,026.6 million, which includes production wellfield expansion, SX-EW expansion, acid plant construction and water treatment facilities. The average life of mine Direct Operating Cash Cost is \$0.91/lb and the average life of mine Total Operating Cash Cost (including royalties, non-income taxes, salvage, reclamation and closure) is \$1.21/lb.

The Company has also evaluated an Alternate case without an Acid Plant. This case generated a pre-tax NPV@7.5% of \$1,585.7 million and an IRR of 51.9% (after-tax: NPV@7.5% of \$1,218.6 million and IRR of 46.6%). Total initial capital expenditures remain the same as the "Acid Plant" scenario. Total sustaining capital costs over the life of the mine are \$873.1 million, which includes production well-field expansion,

SX-EW expansion and water treatment facilities. Average life of mine Operating Direct Cash Costs are estimated at \$1.24/lb for the "No-Acid Plant" option with an average life of mine Total Operating Cash Cost of \$1.53 per pound.

Sensitivity analysis on copper price is shown in the table below.

Sensitivity Analysis (After-Tax)					
Sensitivity	Base Case (Acid Plant)				
	-20%	-10%	0	+10%	+20%
Cu Price	\$3.15	\$3.54	\$3.93	\$4.33	\$4.72
IRR	30.3%	37.6%	44.9%	52.1%	59.5%
NPV*	\$821	\$1,086	\$1,348	\$1,609	\$1,870
Alternate Case (Non-Acid Plant)					
	-20%	-10%	0	+10%	+20%
Cu Price	\$3.15	\$3.54	\$3.93	\$4.33	\$4.72
IRR	31.1%	39.1%	46.6%	54.0%	61.5%
NPV*	\$691	\$957	\$1,219	\$1,480	\$1,741
*million \$ at 7.5% discount rate					

The impact of the changes compared to the 2016 Feasibility Study can be estimated by comparing the 2022 PFS Base Case at a copper price of \$2.75/lb to the Acid Plant case from the 2016 FS at \$2.75/lb copper price (see table below).

	2022 Base Case at \$2.75/lb Cu Price	2016 Acid Plant Case
Years of Commercial Production	24	24
Total Copper Produced (million lbs)	2,153	2,165
LOM Copper Price (avg \$/lb) *	\$2.75	\$2.75
Initial Capital Costs (million \$)	\$45.1	\$46.9
Sustaining Capital Costs (million \$)	\$1,026.6	\$742
Payback of Capital (pre-tax/after-tax)	7.9/8.0	4.5 / 6.4
Internal Rate of Return (pre-tax/after-tax)	25.8%/23.3%	48.4%/40.2%
Life of Mine Direct Operating Cost (\$/pound Cu Recovered)	\$0.914	\$0.65
Acid consumption (lb/lb)	9.53	8.98
Pre-tax NPV at 7.5% discount rate (million \$)	\$769	\$1,173
After-Tax NPV at 7.5% discount rate (million \$)	\$590	\$808

#### Mineral Resources and Mineral Reserves

## Mineral Resource Estimate

The total mineral resource estimate for the North Star Deposit is based on results from 122 drill holes totalling 158,785 feet and is effective as of October 1, 2016 (unchanged from the original 2016 Feasibility Study on the Gunnison Project). The estimate is classified as a measured, indicated or inferred mineral resource, consistent with the CIM definitions referred to in NI 43-101. Excelsior is not aware of any environmental, permitting, legal, title, taxation, socio-political, marketing or other issues which may materially affect its estimate of mineral resources.

North Star Resources (Oxide and Transition at 0.05% cut-off)			
Category	Short Tons (million)	Total Copper (%)	Pounds of Cu (million)
Measured	199	0.36	1,427
Indicated	674	0.27	3,567
Total M&I	873	0.29	4,995
Inferred	187	0.17	630

### Notes:

1. Mineral Resources are inclusive of Mineral Reserves.
2. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
3. Oxidized + Transitional Mineral Resources are reported at a 0.05% total-copper cut-off in consideration of potential mining by in situ recovery.

The North Star mineral resources were modeled to reflect the detailed lithologic, structural, and oxidation modeling completed by Excelsior. Copper mineral domains were interpreted on east-west vertical cross sections on 100-foot spacing, which encompass the 2.3-mile north-south and 1.3-mile east-west extents of the deposit. These domains were then used to explicitly constrain the estimation of copper grades into 50 x 100 x 25-foot (x, y, z) model blocks using 20-foot composites and inverse-distance interpolation. The grade estimation is further controlled by the incorporation of search ellipses that reflect the orientations of modeled structural zones, as well as those of favorable stratigraphic units in areas unaffected by the structures.

All samples were prepared from manually split half-core sections on-site in Arizona. Split drill core samples were then sent to Skyline Assayers & Laboratories ("Skyline") in Tucson, Arizona, an independent laboratory, for Total Copper and Sequential Copper analyses. Skyline is accredited with international standard ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories. Analytical results for Total Copper, Acid Soluble Copper, and Cyanide Soluble Copper were reported. Excelsior has no relationship with Skyline Labs other than Skyline being a service provider. Standards, blanks, and duplicate assays are included at regular intervals in each sample batch submitted from the field as part of an ongoing Quality Assurance/Quality Control Program.

Mr. Jeffrey Bickel, C.P.G., with the independent firm Mine Development Associates (MDA) of Reno, Nevada, is a Qualified Person as defined by NI 43-101 and is responsible for this mineral resource estimate. He has verified, reviewed and approved the technical disclosure contained in this section of the news release. Mr. Bickel has verified the data underlying the results by reviewing the drilling, sampling, assay, and quality assurance and quality control data, as well as the geologic interpretations completed by Excelsior. Mineral resources that are not mineral reserves do not have demonstrated economic viability.

## Mineral Reserve Estimate

The PFS mineral reserve is based on an economic analysis of the mineral resource using a copper price of \$2.75/lb and key parameters developed from prior test work. The economic optimization was performed on Measured and Indicated Resources at a cut-off grade of 0.05% Total Cu ("CuT"). EBIT (earnings before

interest and tax) was calculated on a resource block-by block-basis using the key economic and technical parameters. For a column of resource blocks to be included in the reserve, the capital costs of establishing the wells for those blocks would have to be less than the combine EBIT for the same blocks. The mineral reserve was estimated after applying engineering and operational design parameters which removed the thinner and deeper portions of the mineral resource. Internal dilution has been included in the final mineral reserve estimate. MDA is of the opinion that the mineral reserve estimate derived in this PFS reasonably quantifies the economical mineralization of the North Star Deposit. The reserve estimate is as of October 1, 2016 and the mineral reserves presented in the table below are included in the mineral resource estimate set out above.

North Star Mineral Reserves (Oxide and Transition at 0.05% cut-off) <sup>(1)</sup>			
Category	Short Tons (million)	Total Copper (%)	Pounds of Cu (million)
Probable	782	0.29	4,505

1. 48% of the total copper reserve is considered recoverable

Mr. Neil Prenn, with the independent firm Mine Development Associates (MDA) of Reno, Nevada, is a Qualified Person as defined by NI 43-101 and is responsible for reviewing and approving this mineral reserve estimate. He has verified, reviewed and approved the technical disclosure contained in this section of the news release. Mr. Prenn has verified the data underlying the results by reviewing the drilling, sampling, assay, and quality assurance and quality control data, as well as the geologic interpretations completed by Excelsior.

## Risks

A number of risks are highlighted in the Report. Those that are more specific to in-situ mining include:

- Potential for lower than predicted (modelled) sweep efficiency.
- Potential for mineral precipitates to restrict flow paths, porosity, and permeability.
- Potential for gas bubbles to restrict flow paths, porosity, and permeability.
- Flushing with neutralized raffinate to remove CO<sub>2</sub> may be less effective than modelled.
- The observed CO<sub>2</sub> attenuation could be masking other wellfield problems.
- Short circuiting can occur through very permeable structures, reducing overall sweep efficiency and effecting modelled parameters.

## Opportunities

Opportunities at Gunnison are also highlighted in the Report. Those that are related to in-situ mining include:

- Well stimulation has the potential to alleviate or solve CO<sub>2</sub> gas blocking and greatly improve porosity, permeability, sweep efficiency and flow rates.
- Grouting, down-hole packers, and down-hole flow control valves have the potential to minimize short circuiting.
- Wellfield optimization including well spacing, pump sizing, borehole diameter, hole configuration and down-hole differential flow control have the potential to greatly improve wellfield performance.
- Anticipated copper recoveries could be higher than the estimate of 48 percent of total copper, which would increase total revenue during the life of the mine.
- The conversion of the 187.2 million tons of inferred mineral resources to measured or indicated categories has the potential to increase mineral reserves.
- The Project has high quality limestone resources that could be used to supplement imported lime in the water treatment process.

## Recommendations

A number of recommendations are included in the report aimed at improving wellfield performance, reducing risk, and tightening up engineering and design prior to construction of the raffinate neutralization plant. Excelsior intends to investigate and implement these recommendations prior to further development which

include:

- Metallurgical Testwork Recommendations: Investigating in situ leaching with different lixiviants as opportunities to leach metals without the formation of gypsum.
- Wellfield Recommendations: Conducting experimentation to ensure that neutralized raffinate is effective in dissolving CO<sub>2</sub> in the subsurface while the engineering, procurement, and construction is at an early stage to enhance the water treatment design criteria.
- Well Stimulation Trials: Well stimulation trials should be undertaken to determine if the technique(s) have the potential to alleviate or solve CO<sub>2</sub> blocking, improve connectiveness, and increase flow rates and sweep efficiency. Given that the results of well stimulation have the potential to reduce the need for raffinate neutralization or change the design criteria for the neutralization plant, it should be undertaken before or in parallel with design activities on the water treatment plant. Well stimulation is allowed under Class III Underground Injection Control permits but requires EPA approval of the stimulation programs.
- Water Treatment: A scope of work and bid package should be assembled to select a water treatment vendor to design the water treatment system. Selection criteria should favor rapid, low-cost solutions to demonstrate that the technology is effective in solving the wellfield challenges.

## Johnson Camp HEAP LEACH PRELIMINARY ECONOMIC ASSESSMENT

### Economic Analysis

The Johnson Camp Mine ("JCM") has historically been an open pit, heap leach operation since Cyprus Minerals opened the property in the 1970's. The operation includes two open pits, a two-stage crushing-agglomerating circuit, a fully functioning SX-EW plant capable of producing 25 million pounds of cathode copper per year, a complete set of PLS and raffinate ponds, and full infrastructure (ancillary facilities, access, power, water, and communications).

Excelsior is exploring re-opening the Burro and Copper Chief pits for open pit mining to produce run-of-mine (ROM) material that can be placed on a new leach pad (Pad 5) as a means of extracting copper from the remaining mineral resources within the two pits. A Preliminary Economic Assessment (PEA) has been completed by M3 with respect to this planned re-opening.

Mining of JCM would be by traditional open pit and the highlights of the PEA financial model are tabulated below assuming a copper price of \$4.25/lb. (Year 1 through 5) and \$4.00/lb (beyond Year 5).

Mine Life and post mining processing	~5 years
Heap Leach Material Mined	19.64 M ton
Total Copper Grade (CuT%)	0.387%
Acid Soluble Copper Grade (AsCu%)	0.187%
Cu Produced	65.9 M lb
Total Tonnage Mined	34.4 M ton
Initial Capital for new heap leach pad	\$26.5 million
Initial Mine Capital	\$14.3 million
Total Operating Cash Cost (\$/lb Cu)	\$2.83
After-Tax NPV/IRR (7.5% discount rate)	\$7.8M / 13.4%

The table below sets out the sensitivities of the After-Tax NPV and IRR to copper price:

Sensitivity Analysis					
Sensitivity	-20%	-10%	0	+10%	+20%
Cu Price	\$3.40	\$3.83	\$4.25	\$4.67	\$5.10
IRR After-Tax	(11.2)%	(4.8)%	13.4%	29.7%	42.9%
NPV* After-Tax	(\$38)	(\$16)	\$7	\$27	\$44
*million \$ at 7.5% discount rate					

The PEA is preliminary in nature and includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves. There is no certainty that the conclusions reached in the PEA will be realized. Mineral resources that are not mineral reserves do not have demonstrated economic viability.

Based on the current pit shell limited mineral resources for the two pits is approximately 61.5 million tons at a cut-off grade of 0.2% CuT. The amount that is included in the conceptual mine plan over four years of mining is 19.6 million tons. It is possible that more than the initial 19.6 million tons can be mined from the JCM open pits if copper prices continue to be favorable.

"With the positive NPV result of the Johnson Camp open pit, heap leach PEA, Excelsior has an opportunity to increase copper production in the short to medium term with conventional mining and utilizing our existing Solvent Extraction infrastructure. Infill drilling and capital risk reduction has the opportunity to further improve JCM economics as we complete the necessary recommendations on our core Gunnison asset", says Robert Winton, Sr. VP Operations.

Excelsior management has launched a small drilling program to confirm mineral resources and additional column leach metallurgical testing to confirm prior test work.

## Mineral Resources

The JCM Mineral Resources are provided in the table below.

Classification	Tons	% CuT	% CuAs	lbs CuT	lbs CuAs
Inferred	61,529,000	0.38	0.18	472,167,000	220,189,000

1. The Effective Date of the mineral resources is February 21, 2022.
2. The project mineral resources are comprised of all model blocks at a 0.2 % CuT cut-off that lie within optimized resource pits.
3. Mineral resources that are not mineral reserves do not have demonstrated economic viability.
4. The estimate of mineral resources may be materially affected by geology, environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.
5. Rounding as required by reporting guidelines may result in apparent discrepancies between tons, grade, and contained metal content.

The estimate is classified as an inferred mineral resource, consistent with the CIM definitions referred to in National Instrument 43-101. The Johnson Camp Mine mineral resources are entirely classified as Inferred. This classification is based on the confidence in the underlying data which are largely historical. Excelsior's sampling programs in 2016 and 2017 verified the historical data sufficiently to warrant the Inferred classification, but additional drilling and sampling, as well as more detailed geological modeling, would be required to allow for higher classification of the project resources.

The JCM copper resources were modeled and estimated using information provided by Excelsior under Mr. Bickel's supervision. The information is derived from historical core holes drilled by Cyprus Mining, Arimetco, Summo USA Corp., and Nord Resources Corp. The drill hole database also includes analyses performed by Excelsior on the historical core. These data, as well as digital topography of the project area, were provided

to MDA by Excelsior.

Total copper grades, as well as soluble copper ratios, were interpolated using inverse distance, ordinary kriging, and nearest-neighbor methods. The mineral resources reported herein were estimated by inverse distance interpolation as this method led to results that most appropriately reflected the drill data and geology of the deposit. This is particularly true with respect to the estimation of the lowest-grade areas in the model, where potential over-estimation of volumes could materially impact the resource estimation at grades close to potential open-pit mining cut-offs. The nearest-neighbor estimation was completed for the purposes of statistical checking of the various estimation iterations.

The JCM mineral resources have been estimated to reflect potential open-pit extraction and potential processing by heap leaching. To meet the requirement of the resources having reasonable prospects for eventual economic extraction, a pit optimization was completed using the parameters summarized in the table below.

Parameter	Value	Unit
Copper Price	\$ 4.00	\$/lb sold
Contract Mine Cost	\$ 2.30	\$/ton Mined
Heap Management	\$ 0.25	\$/ton Processed
Heap Capital Cost	\$ 0.60	\$/ton Processed
G&A Cost	\$ 0.07	\$/lb Cu Produced
SXEW Cost	\$ 0.25	\$/lb Cu Produced
Recovery	90%	Acid Soluble Cu
Royalty	17.90%	NSR
Acid Cost	\$ 120	\$/ton

Acid Consumption and Cost by Formation

Formation	Acid Cons. lb/ton	Acid Cost \$/ton Processed
Pioneer Shale	20	\$ 1.20
Bolsa Quartzite	25	\$ 1.50
Diabase	30	\$ 1.80
Middle Abrigo	55	\$ 3.30
Upper Abrigo	45	\$ 2.70
Lower Abrigo	40	\$ 2.40
Martin	70	\$ 4.20

The pit shells created using these optimization parameters were used to constrain the project resources. The in-pit resources were further constrained by the application of a cut-off of 0.2% CuT to all model blocks within the optimized pits.

Mr. Jeffrey Bickel, C.P.G., with the independent firm Mine Development Associates (MDA) of Reno, Nevada, is a Qualified Person as defined by NI 43-101 and is responsible for this mineral resource estimate. He has verified, reviewed and approved the technical disclosure contained in this section of the news release. Mr. Bickel has verified the data underlying the results by reviewing the drilling, sampling, assay, and quality

assurance and quality control data, as well as the geologic interpretations completed by Excelsior. Mr. Bickel is not aware of any environmental, permitting, legal, title, taxation, socio-political, marketing or other issues which may materially affect its estimate of mineral resources.

## PEA Assumptions

The JCM plan has been developed with the expectation that it will produce leachable copper material and provide cash flow while the Gunnison Copper Project is being constructed. This mine plan targets a small tonnage portion on the east side of the Burro deposit that is planned to be mined over a 3.5-year period. A contract miner will be selected for executing the mining portion of the project because of the short duration of the mine plan.

Mining of the deposit is expected to be accomplished with 100-ton haul trucks and front-end loaders. Mining is planned on 20-ft bench heights. The pit configuration is double-benched with catch benches every vertical 40 ft. An annual schedule was developed for the mine plan. Run of mine heap leach material will be processed by placement on a truck-dumped leach pad. This tonnage production is limited by the copper production capacity of the existing SX-EW plant of 25 million pounds of copper per year.

The mining contractor is expected to be responsible for mine supervision, equipment operation, equipment maintenance, and blast hole drilling and loading. The reference to specific equipment manufacturers is to illustrate equipment size and is not to be considered a recommendation by Independent Mining Consultants. Production drilling is expected to be accomplished with Epiroc DM45 class drills or similar. Loading is expected to be accomplished with 14-yard CAT 992 class front-end loaders. Haul trucks are planned to be CAT 777 class 100-ton trucks.

The existing leach pads (Pads 1, 2 & 3) will not be used for future mining for new material extracted from the Burro and Copper Chief pits. The new leach pad area, Pad 5, is to be located northeast of the existing plant facility and is to be designed such that leach solutions flow by gravity into the new combined ILS-PLS pond located down slope of the new leach pad. The PLS solution will be pumped back to the existing JCM SX-EW plant. A storm water pond is also provided.

An Aquifer Protection Permit ("APP") is required for facilities that have the potential to discharge and impact groundwater quality. The Johnson Camp Mine is currently covered under Aquifer Protection Permit P-100514. Excelsior is currently working on a significant amendment to the existing APP to accommodate mining at JCM from the Burro Pit. A new facility, Leach Pad 5, with associated impoundments needs to be added to the existing APP to accommodate resumption of mining at JCM.

The full capital cost for restarting the JCM heap leaching operation between mining pre-production, first fills/Owners costs, leach pad construction and haul road construction is approximately \$26.5 million. Staffing for the JCM project is mostly in place and few hires will be needed to augment the existing staff.

## Risks and Opportunities

Infill drilling results incorporated into a new mine plan have the opportunity to generate increased copper tons earlier in the mine life from the current PEA, improving NPV. More detailed capital planning will reduce contingency values and potentially reduce the overall project cost. Macroeconomic pressure on reagent costs and procurement time could ease through 2022, improving the return on capital and reducing the time to first production.

Risks to a successful restart of the JCM pits are a worsening of supply chain lead times and further upward pressure on input costs. Infill drilling reduces copper resources, increases ore-waste ratios, or moves production further along the mine life also have the potential to reduce the economic potential of the JCM pits.

Excelsior will be completing additional infill drilling and metallurgical testing prior to making a final decision on the start of operations at JCM.

## Technical Report and Qualified Person

The Report will be filed on SEDAR and on Excelsior's website today. The Report will consist of a summary of the PFS. The Report is being prepared under the supervision of Richard Zimmerman, SME-RM of M3 Engineering & Technology Corporation, Tucson, Arizona, who is a Qualified Person that is independent of the Company. The Report will also receive contributions from the following additional Qualified Persons, who are also independent of the Company:

- Mr. Thomas L. Drielick, of M3 Engineering & Technology Corporation, Tucson, Arizona (recovery methods, capital and operating costs, and economic analysis).
- Mr. Jeffrey Bickel of MDA of Reno, Nevada (geology and mineral resource).
- Mr. Neil Prens, of MDA of Reno, Nevada (mineral reserve).
- Dr. Robert J. Bowell of SRK Consulting, Cardiff, UK (wellfield).
- Dr. Terence P. McNulty of T.P. McNulty & Associates of Tucson, Arizona (metallurgy).
- Mr. R. Douglas Bartlett, of Clear Creek and Associates of Phoenix, Arizona (hydrology, mining method, permitting and environment).
- Herb Welhener of Independent Mining Consultants, Inc. of Tucson, Arizona (Mining methods for Johnson Camp)

Each of these Qualified Persons has reviewed and approved the technical information contained in this news release that is relevant to their area of responsibility and verified the data underlying such technical information.

## About Excelsior Mining

Excelsior "The Copper Solution Company" is a mineral exploration and production company that owns and operates the Gunnison Copper Project in Cochise County, Arizona. The project is a low cost, environmentally friendly in-situ recovery copper extraction project that is permitted to 125 million pounds per year of copper cathode production. Excelsior also owns the past producing Johnson Camp Mine and a portfolio of exploration projects, including the Peabody Sill and the Strong and Harris deposits.

For more information on Excelsior, please visit our website at [www.excelsiormining.com](http://www.excelsiormining.com).

## Cautionary Note Regarding Forward-Looking Information

This news release contains "forward-looking information" concerning anticipated developments and events that may occur in the future. Forward looking information contained in this news release includes, but is not limited to, statements with respect to: (i) expectations for the resolution of carbon dioxide issues and increased flow rates; (ii) the future development plans for the Gunnison Project; (iii) operating and capital costs estimates, along with the economics of the Gunnison Project and JCM; (iv) the intention to mine Johnson Camp and future production therefrom; and (v) the results of the PFS and PEA.

In certain cases, forward-looking information can be identified by the use of words such as "plans", "expects" or "does not expect", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "does not anticipate", or "believes", or variations of such words and phrases or state that certain actions, events or results "may", "could", "would", "might", "occur" or "be achieved" suggesting future outcomes, or other expectations, beliefs, plans, objectives, assumptions, intentions or statements about future events or performance. Forward-looking information contained in this news release is based on certain factors and assumptions regarding, among other things, the estimation of mineral resources and mineral reserves, the realization of resource and reserve estimates, expectations and anticipated impact of the COVID-19 outbreak, copper and other metal prices, the timing and amount of future development expenditures, the estimation of initial and sustaining capital requirements, the estimation of labour and operating costs (including the price of acid), the availability of labour, material and acid supply, receipt of and compliance with necessary regulatory approvals and permits, the estimation of insurance coverage, and assumptions with respect to currency fluctuations, environmental risks, title disputes or claims, and other similar matters. While the Company considers these assumptions to be reasonable based on information currently available to it, they may prove to be incorrect.

Forward looking information involves known and unknown risks, uncertainties and other factors which may

cause the actual results, performance or achievements of the Company to be materially different from any future results, performance or achievements expressed or implied by the forward-looking information. Such factors include risks inherent in the construction and operation of mineral deposits, including risks relating to changes in project parameters as plans continue to be redefined including the possibility that mining operations may not be sustained at the Gunnison Copper Project, risks relating to variations in mineral resources and reserves, grade or recovery rates, risks relating to the ability to access infrastructure, risks relating to changes in copper and other commodity prices and the worldwide demand for and supply of copper and related products, risks related to increased competition in the market for copper and related products, risks related to current global financial conditions, risks related to current global financial conditions and the impact of COVID-19 on the Company's business, uncertainties inherent in the estimation of mineral resources, access and supply risks, risks related to the ability to access acid supply on commercially reasonable terms, reliance on key personnel, operational risks inherent in the conduct of mining activities, including the risk of accidents, labour disputes, increases in capital and operating costs and the risk of delays or increased costs that might be encountered during the construction or mining process, regulatory risks including the risk that permits may not be obtained in a timely fashion or at all, financing, capitalization and liquidity risks, risks related to disputes concerning property titles and interests, environmental risks and the additional risks identified in the "Risk Factors" section of the Company's reports and filings with applicable Canadian securities regulators.

Although the Company has attempted to identify important factors that could cause actual actions, events or results to differ materially from those described in forward-looking information, there may be other factors that cause actions, events or results not to be as anticipated, estimated or intended. Accordingly, readers should not place undue reliance on forward-looking information. The forward-looking information is made as of the date of this news release. Except as required by applicable securities laws, the Company does not undertake any obligation to publicly update or revise any forward-looking information.

SOURCE [Excelsior Mining Corp.](#)

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